

## CLAIMS

We claim:

1. A renal replacement therapy system comprising an extracorporeal circuit for circulating blood from an individual through a blood treatment device to remove waste, the extracorporeal circuit including a blood line coupled to the blood treatment device and adapted to draw blood from the individual, a blood pump to convey blood through the blood line from the individual into the blood treatment device at a blood flow rate, a waste removal line to convey waste fluid from the blood treatment device, a sensor in the blood line to sense blood pressure, and a controller coupled to the sensor and the blood pump to adjust the blood flow rate to maintain blood pressure at a predetermined set value.

2. A system according to claim 1

wherein the controller generates an alarm output based upon variance between sensed blood pressure and the predetermined set value.

3. A system according to claim 2

wherein the alarm output terminates operation of the blood pump.

4. A method for carrying out renal replacement therapy comprising the steps of

conveying blood from the individual at a blood flow rate through a blood line into a blood treatment device to remove waste fluid,

conveying waste fluid from the blood treatment device through a waste removal line,  
sensing blood pressure in the blood line, and  
adjusting the blood flow rate to maintain blood pressure at a predetermined set value.

5. A method according to claim 4

further including the step of generating an alarm output based upon variance between  
sensed blood pressure and the predetermined set value.

6. A method according to claim 5

wherein the alarm output terminates operation of the blood pump.

7. A renal replacement therapy system, comprising:

a filter;

an arterial blood line connectable to a patient access and adapted to convey blood from  
said patient access to a filter;

a venous blood line connectable to said patient access and adapted to convey blood from  
said filter to patient access; and

a pump configured to convey blood through said arterial blood line, a sensor to sense  
pressure in said arterial blood line, and a controller connected to receive a pressure signal from  
said sensor and to control a rate of flow of said pump;

said controller being configured to maintain a constant pressure in said arterial blood  
line by regulating a speed of said pump in response to said pressure signal.

8. A system as in claim 7, wherein said controller is configured to slow said rate of flow when said pressure drops.

9. A system as in claim 8, wherein said controller is configured to speed up said rate of flow when said pressure increases.

10. A system as in claim 7, wherein said controller is configured to control said rate of flow by controlling a speed of said pump.

11. A system as in claim 7, wherein said controller is a microcomputer programmed to compare said pressure signal with a predetermined value.

12. A system as in claim 7, wherein said controller is configured such that when said patient access becomes clogged, said rate of flow is slowed.